

Louisville Metro Air Pollution Control District
850 Barret Ave., Louisville, Kentucky 40204
04 April 2013

Construction Statement of Basis

Company: Kosmos Cement Company

Plant Location: 15301 Dixie Hwy, Louisville, Kentucky 40272

Date Application Received: 4 October 2011

Application License Number: 33717

Date of Draft Permit: 04 April 2013

District Engineer: Randy Schoenbaechler

Permit No: 36017-13-C

Plant ID: 0060

SIC Code: 3241

NAICS: 32731

AFS: 00060

Introduction:

This permit will be issued pursuant to District Regulation 2.03, Permit Requirements - Non-Title V Construction and Operating Permits and Demolition/Renovation Permits. Its purpose is to provide methods of determining continued compliance with all applicable requirements.

Jefferson County is classified as an attainment area for lead (Pb), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), 1 hr and 8 hr ozone (O₃), and particulate matter less than 10 microns (PM₁₀); and is a non-attainment area for particulate matter less than 2.5 microns (PM_{2.5}).

Application Type/Permit Activity:

☒ Initial Issuance

☐ Permit Revision

☐ Administrative

☐ Minor

☐ Significant

☐ Permit Renewal

☒ Construction

Compliance Summary:

☒ Compliance certification signed

☐ Compliance schedule included

☐ Source is out of compliance

☒ Source is operating in compliance

I. Source Information

- 1. Plantwide Product/Process Description:** The source produces Portland cement.
- 2. Project Description:** The source proposed to replace the old South Load Spout (K1485) with a new one which has an integrated dust collector (1487A – South Load Spout DC) allowing the old dust collector (K1487) to control just the airslide.
- 3. Site Determination:** There are no other facilities that are contiguous or adjacent and under common control.
- 4. Emission Unit Summary:**

Construction No.	Equipment Description
36017-13-C	One (1) new South Truck/Railcar Loading Spout (K1485)(500 ton/hr) for cement by Midwest International, model MVL43H 540C Vaculoder, Class IA/II with integrated Dust Collector (K1487A).

5. Permit Revisions

Revision No.	Date of Issuance	Public Notice Date	Type	Emission Unit/Page No.	Description
Initial	x/xx/2013	4/04/2013	Initial	Entire Permit	New South Load Spout (K1485) with integrated dust collector (1487A)

- 6. Fugitive Sources:** Fugitive emissions of dust from any part of the plant are subject to Regulation 1.14, *Control of Fugitive Particulate Emissions*.

7. Plantwide Emission Summary:

Pollutant	District calculated Actual Emissions 2011 Data (tpy)	Major Source Status (based on PTE)
CO	324.01	Yes
NO_x	1097	Yes
SO₂	187.47	Yes
PM/PM₁₀	584.24/420.59	Yes
VOC	51.34	Yes
Single HAP > 1 tpy		
Hydrochloric Acid	20.53	Yes
Hydrogen Fluoride	8.82	Yes
Total HAPs	33.08	Yes

8. Applicable Requirements:

☐ PSD ☐ 40 CFR 60 ☒ SIP
☐ NSR ☐ 40 CFR 61 ☒ District-Origin
 ☒ 40 CFR 63 ☐ Other

9. MACT Requirements:

40 CFR 63 Subpart A General Provisions
40 CFR 63 Subpart LLL National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry

10. Referenced Federal Regulations in Permit:

40 CFR 63 Subpart A General Provisions
40 CFR 63 Subpart LLL National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry

II. Regulatory Analysis

- Acid Rain Requirements:** The source is not subject to the Acid Rain Program.
- Stratospheric Ozone Protection Requirements:** Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. This source does not manufacture, sell, or distribute any of the

listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.

- 3. Prevention of Accidental Releases 112(r):** The source does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, *Chemical Accident Prevention Provisions*, in a quantity in excess of the corresponding specified threshold amount.

4. Basis of Regulation Applicability

a. Applicable Regulations:

Regulation	Title	Type
2.03	Permit Requirements – Non-Title V Construction and Operating Permits and Demolition/Renovation Permits	SIP
2.04	Construction Modification of Major Sources In or Impacting Upon Non-Attainment Areas	SIP
2.05	Prevention of Significant Deterioration of Air Quality	SIP
5.00	Definitions	Local
5.01	General Provisions	Local
5.02	Adoption and Incorporation by Reference of National Emission Standards for Hazardous Air Pollutants	Local
5.20	Methodology for Determining Benchmark Ambient Concentration of a Toxic Air Contaminant	Local
5.21	Environmental Acceptability for Toxic Air Contaminants	Local
5.22	Procedures for Determining the Maximum Ambient Concentration of a Toxic Air Contaminant	Local
5.23	Categories of Toxic Air Contaminants	Local
7.08	Standards of Performance for New Process Operations	SIP
40 CFR 63 Subpart LLL	National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry	FEDERAL

b. **Permit 36017-13-C**i. **Equipment:**

Emission Points			
ID	Description	Applicable Regulation(s)	Basis for Applicability
K1485	One (1) New South Load Spout controlled by integrated dust collector K1487A	2.04	The potential uncontrolled PM2.5 emissions are greater than 10 tons per year.
		2.05	The potential uncontrolled PM and PM10 emissions are greater than 25 and 15 tons per year respectively.
		5.00, 5.01, 5.20, 5.21, 5.22, & 5.23	Establish the criteria for determining the environmental acceptability of emissions of toxic air contaminants.
		7.08	Regulation 7.08 applies to each process operation that commenced operation after September 1, 1976
		40 CFR 63 Subpart LLL	40 CFR 63 Subpart LLL applies to each new and existing Portland cement plant

ii. **Standards/Operating Limits**a. **PM**

- i. The PM limits are calculated per Regulation 7.08, section 3.1.2. The equation to calculate the emission limits for process rates greater than 60,000 lb/hr is $E = 17.31P^{0.16}$, where P is expressed in tons/hr. The maximum throughput is 500 tph for the load spout, therefore; the PM emission standard is 46.79 lb/hr.
- ii. The PM, PM10, and PM2.5 limits are given in order to avoid PSD/NSR review as per Regulations 2.04 and 2.05.

b. **Opacity**

Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

c. **HAP**

40 CFR 63.1345 establishes an opacity standard of 10% or less.

d. **TAC**

Regulation 5.00 and 5.21 establish that emissions of any TAC shall not exceed environmentally acceptable (EA) levels.

iii. **Monitoring and Recordkeeping**

a. **PM**

The District may require any monitoring or recordkeeping requirements necessary to ensure compliance with the standards per Regulation 2.03, section 5.1.

b. **Opacity**

The District may require any monitoring or recordkeeping requirements necessary to ensure compliance with the standards per Regulation 2.03, section 5.1.

c. **HAP**

40 CFR 63.1350(f)(1) requires monthly ten-minute visible emissions tests in accordance with Method 22.

d. **TAC**

The District may require any monitoring or recordkeeping requirements necessary to ensure compliance with the standards per Regulation 2.03, section 5.1.

iv. **Reporting**

a. **PM**

The District may require any reporting requirements necessary to ensure compliance with the standards per Regulation 2.03, section 5.1.

b. **Opacity**

The District may require any reporting requirements necessary to ensure compliance with the standards per Regulation 2.03, section 5.1.

c. **HAP**

The District may require any reporting requirements necessary to ensure compliance with the standards per Regulation 2.03, section 5.1.

d. **TAC**

The District may require any reporting requirements necessary to ensure compliance with the standards per Regulation 2.03, section 5.1.

III. Other Requirements

1. **Temporary Sources:** The source did not request to operate any temporary facilities.
2. **Short Term Activities:** The source did not report any short term activities.
3. **Emissions Trading:** N/A
4. **Operational Flexibility:** The source did not request any operational flexibility for these emission points.
5. **Compliance History:**

Regulation Number	Regulation Short Name	Date NOV Letter Mailed	Resolution Type
1.09	Air Pollution: General Prohibition	7/15/1993	Agreement
6.09	Standard for Particulates	7/15/1993	Agreement
1.14	Fugitive: Visible Past Property Line	9/23/1993	Agreement
1.14	Fugitive: Visible Past Property Line	11/17/1993	Agreement
1.14	Fugitive: Open Site	3/20/1995	Agreement
1.07	EDSAM: Malfunction: Failure to Notify	8/31/1995	Board
7.02	Sub F: Portland Cement Plants	8/31/1995	Board
2.03	Permit Conditions Not in Accordance With Application	7/19/1996	Agreement
6.42	Performance Testing	7/19/1996	Agreement
1.07	Notification of Excess Emissions Within 1 Hour	2/16/2001	Agreement
1.14	Fugitive: Visible Past Property Line	2/16/2001	Agreement
1.14	Fugitive: Open Site	3/12/2002	Agreement
1.14	Fugitive: Visible Past Property Line	7/18/2003	Agreement
1.14	Fugitive: Visible Past Property Line	7/18/2003	Agreement
1.14	Fugitive: Open Site	7/18/2003	Agreement
1.14	Fugitive: Visible Past Property Line	7/18/2003	Agreement
1.14	Fugitive: Visible Past Property Line	7/8/2004	Board
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1.14	Fugitive: Visible Past Property Line	7/8/2004	Board
1.14	Fugitive: Open Site	7/8/2004	Board
2.16	Requirements for Operating	7/8/2004	Board
1.14	Fugitive: Visible Past Property Line	7/8/2004	Board
2.16	Requirements for Operating	9/2/2004	Board
1.14	Fugitive: Visible Past Property Line	10/18/2004	Board
1.14	Fugitive: Visible Past Property Line	2/10/2005	Board
1.14	Fugitive: Open Site	6/14/2005	Board
1.14	Fugitive: Open Site	11/14/2005	Board
1.14	Fugitive: Open Site	11/14/2005	Board
1.14	Fugitive: Open Site	1/17/2007	Board
1.14	Fugitive: Open Site	4/2/2007	Board
1.14	Fugitive: Open Site	7/9/2010	Board
1.14	Fugitive: Open Site	7/9/2010	Board
1.14	Fugitive: Open Site	7/9/2010	Board
1.14	Fugitive: Open Site	7/9/2010	Board
1.14	Fugitive: Open Site	7/9/2010	Board
2.03	Permit Conditions: Binding	7/9/2010	Board
2.16	Requirements for Operating	7/9/2010	Board

- 6. Calculation Methodology:** Emission factor for the loading spout shall use emission factors for concrete batching (truck loading) (AP-42, 11.12). The uncontrolled emission factors are 1.118 lb/ton for PM, and 0.310 lb/ton for PM10, and PM2.5. Since the loading spout is near totally enclosed due to its physical nature the following comparison will be made to determine what reduction will be used.

Emissions for material transfer points are determined using drop point equation from AP-42 Section 13.2.4, Equation (1):

$$\text{PM Emission Factor} = E(\text{lb/ton}) = k(0.0032)((U/5)^{1.3})/((M/2)^{1.4})$$

Where: k = particle size multiplier

U = wind speed, 8.4 mph for open pile, versus, 1.3 mph for enclosed equipment

M = material moisture content (%)

For reduction due to Enclosure (Wind Speed):

$$E(\text{lb/ton}) @ 1.3 \text{ mph} / E(\text{lb/ton}) @ 8.4 \text{ mph} = 1.3^{1.3} / 8.4^{1.3} = 0.088423$$

Or a reduction of $1 - 0.09 = 91\%$ uncontrolled

Therefore the District accepted emission factors are the following:

PM = 1.118 lb/ton $(1 - 0.91) = 0.1$ lb/ton uncontrolled

PM = 0.02 gr/dscf controlled

PM10 = PM2.5 = 0.310 lb/ton $(1 - 0.91) = 0.028$ lb/ton uncontrolled

PM10 = 0.02 gr/dscf (50%) controlled
PM2.5 = 0.02 gr/dscf (25%) controlled

The uncontrolled emission factor and the assumption of 50% and 25% of Total PM for PM10 and PM2.5 respectively are accepted by the District until such time that alternative factors have been established by a stack testing stipulated in the permit or otherwise and approved by the District.

For HAPs and TACs the emission factors accepted by the District are as follows:

Cr⁺³ = 0.0012%
Cr⁺⁶ = 0.0018%
Hg = 0.0000084%
Mn = 0.0158%
Ni = 0.00267%
Pb = 0.00112%
As = 0.00112%
Cd = 0.00014%
Co = 0.00075%
Cu = 0.00013% (TAC only)
Total Chromium = 0.003%
Total HAPs = 0.246084%

7. **Permit Fee:** Construction permit fees are based on equipment subject to Federal PSD/NSR and having received limits to avoid PSD review in accordance with Regulation 2.08, Section 2.5.1.1.
8. **Insignificant Activities:** There are no insignificant activities contained in this construction permit.